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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Applicant: Chan	Art Unit: 2613
Serial No.: 09/932,127	Examiner: Lee
Filed: August 16, 2001	**50R4781**
For: ERROR CONCEALMENT OF VIDEO DATA USING TEXTURE DATA RECOVERY	September 6, 2005 750 B STREET, Suite 3120 San Diego, CA 92101

APPEAL BRIEF

Commissioner of Patents and Trademarks

Dear Sir:

This brief is submitted under 35 U.S.C. §134 and is in accordance with 37 C.F.R. Parts 1, 5, 10, 11, and 41, effective September 13, 2004 and published at 69 Fed. Reg. 155 (August 2004). This brief is further to Appellant's Notice of Appeal filed herewith.

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(1) Real Party in Interest

The real party in interest is Sony Corp.

(2) Related Appeals/Interferences

No other appeals or interferences exist which relate to the present application or appeal.

(3) Status of Claims

Claims 1-25 and 27 are pending and finally rejected, and Claim 26 has been canceled.

(4) Status of Amendments

No amendments are outstanding.

(5) Concise Explanation of Subject Matter in Each Independent Claim, with Page and Figure Nos.

As an initial matter, it is noted that according to the Patent Office, the concise explanations under this section are for Board convenience, and do not supersede what the claims actually state, 69 Fed. Reg. 155 (August 2004), see page 49976. Accordingly, nothing in this Section should be construed as an estoppel that limits the actual claim language.

Claim 1 recites a method for concealing errors in a texture partition of a video packet. The method includes determining a particular macroblock within the texture partition where error is detected, page 9, line 1, figure 1A, and concealing the error starting at the particular macroblock, page 8, line 19, figure 1, block 110. The method also includes evaluating image smoothness of concealed macroblocks, page 9, line 8, figure

1A, block 112, and repeating the concealing and evaluating with one more macroblock added prior to the previous particular macroblock such that the concealing and evaluating is done on the combination of the one more macroblock and the previous particular macroblock, page 9, lines 20-24 (discussing storing mismatch values for use in subsequent iterations), page 10, lines 1-10 (discussing "incrementing K by one...and repeating"). The repeating is done by successively adding one more macroblock to the combination until all macroblocks in the texture partition have been concealed, id. A set of macroblocks, including a combination of decoded and concealed macroblocks, is selected that produces best image smoothness, page 10, line 15, figure 1A, block 120.

The reference numerals above for the elements of Claim 1 are incorporated into this paragraph. Claim 9 sets forth a method for concealing errors in texture partition of a video packet which includes determining a particular macroblock within the texture partition where error is detected, and concealing the error starting at the particular macroblock, page 9, line 1, figure 1A, page 8, line 19, figure 1, block 110. The method also includes evaluating image smoothness of concealed macroblocks, page 9, line 8, figure 1A, block 112, and repeating the concealing and evaluating with one more macroblock added prior to the previous particular macroblock, with the repeating being done until all macroblocks in the texture partition have been concealed, page 9, line 20-page 10, line 10, figure 1A. A set of macroblocks, including a combination of decoded and concealed macroblocks, is selected that produces best image smoothness, page 10, line 15, figure 1A, block 120. Pixel value mismatches between macroblocks belonging to different video packets are weighed differently from each other, with differences in weighing depending on differences in desired quality of video frames, page 11, lines 13-15, figure 3.

The reference numerals above for the elements of Claim 1 are incorporated into this paragraph. Claim 19 casts the invention in terms of a method for concealing errors in texture partition of a video packet that includes determining a particular location within the texture partition where error is detected, and concealing the error in texture data starting at the particular location, supra. The method also includes evaluating image smoothness of the concealed texture data at least in part by assigning first weights to pixel value mismatches between macroblocks in a first video data structure and assigning second weights to pixel value mismatches between macroblocks in a second video data structure, page 11, lines 13-15, figure 3. The first and second weights are not identical to each other and each is established based at least in part on a respective desired quality of video decoded from the respective video data structure, Id. The concealing and evaluating are repeated with one more texture data unit added prior to the previous particular location until all texture data units in the texture partition have been concealed, supra. A set of texture data units, including a combination of decoded and concealed texture data units, is selected that produces best image smoothness, supra.

The reference numerals above for the elements of Claim 1 are incorporated into this paragraph. Claim 21 recites an error concealment system for texture partition of a video packet that includes an error location detector to receive video packets and to determine a particular macroblock within the texture partition where error is detected, supra and page 11, line 22, figure 4, element 402. An error concealment element to conceal the error starting at the particular macroblock is also disclosed, supra and page 12, line 13, figure 4, element 406. An image smoothness evaluator evaluates the concealed macroblocks, with the evaluator at least in part summing squares of element value differences in a manner that weighs element value mismatches between macroblocks belonging to different video packets differently based at least in part on different desired

qualities of video, supra and page 12, line 22, figure 4, element 408. A selector selects a set of macroblocks, including a combination of decoded and concealed macroblocks, that produces best image smoothness, supra and page 13, line 4, figure 4, element 410.

The reference numerals above for the elements of Claim 1 are incorporated into this paragraph. Claim 24 sets forth a computer readable medium containing executable instructions which, when executed in a processing system, causes the system to conceal errors in texture partition of a video packet. The instructions include determining a particular macroblock within the texture partition where error is detected, supra, and concealing the error starting at the particular macroblock, supra. Also, the instructions include evaluating image smoothness of concealed macroblocks, repeating said concealing and evaluating with one more macroblock added prior to the previous particular macroblock, with the concealing and evaluating being done on the combination of the one more macroblock and the previous particular macroblock and with the repeating done by successively adding one more macroblock to the combination until all macroblocks in the texture partition have been concealed, supra. Moreover, the instructions include selecting a set of macroblocks, including a combination of decoded and concealed macroblocks, that produces best image smoothness, supra.

(6) Grounds of Rejection to be Reviewed on Appeal

(a) Claims 1-8, 11-18, 24, 25, and 27 have been rejected under 35 U.S.C. §112, first paragraph as lacking adequate written description.

(b) Claims 1-3, 5-8, 11-14, 17, 18, 24, and 25 have been rejected under 35 U.S.C. §103 as being unpatentable over Brailean et al., USPN 5,724,369 in view of Katsavounidis et al., USPP 2003/0012287 and Zhao et al., USPP 2003/0067981.

(c) Claims 9, 10, and 19-23 have been rejected under 35 U.S.C. §103 as being unpatentable over Brailean et al. in view of Zhao et al. and Moni et al., USPN 6,697,126.

(d) Claims 4, 15, and 16 have been rejected under 35 U.S.C. §103 as being unpatentable over Brailean et al. in view of Katsavounidis et al. and Zhao et al., and further in view of Talluri et al., USPN 6,111,916.

(e) Claim 27 has been rejected under 35 U.S.C. §103 as being unpatentable over Brailean et al. in view of Katsavounidis et al. and Zhao et al. and Moni et al.

(7) Argument

As an initial matter, it is noted that according to the Patent Office, a new ground of rejection in an examiner's answer should be "rare", and should be levied only in response to such things as newly presented arguments by Applicant or to address a claim that the examiner previously failed to address. 69 Fed. Reg. 155 (August 2004), see, e.g., pages 49963 and 49980. Furthermore, a new ground of rejection must be approved by the Technology Center Director or designee and in any case must come accompanied with the initials of the conferees of the appeal conference, id., page 49979.

(a) The claims rejected as lacking written description are more than adequately described. It appears to be the examiner's position that the specification teaches processing each macroblock individually, but not

adding a macroblock to previously processed macroblocks for evaluation. On the contrary, as even a cursory reading of the specification reveals, mismatch values are store for re-use, page 9, last paragraph, so that when K is incremented by one, the "point of demarcation" is advanced toward the beginning of the texture partition and the evaluation is repeated with more efficiency, page 10, first paragraph. Plainly, storing values for re-use necessitates more than simply processing each individual macroblock in isolation. Note that the iteration teaching on page 10 refers back to the step discussed on page 8, lines 18 and 19, wherein it is taught that "K" macroblocks together are processed for error concealment.

(b) Independent Claims 1 and 24 and various dependent claims have been rejected as being unpatentable over Brailean et al. in view of Katsavounidis et al. and Zhao et al. Neither secondary reference appears to be prior art to the present claims. Specifically, both secondary references were filed after the present application. Both secondary references claim priority to the same three earlier-filed provisional applications, but it appears, after having scanned the 121 pages these three provisionals add up to, that neither the relied-upon paragraph 43 in Katsavounidis et al. nor the relied-upon paragraphs 172 and 174 in Zhao et al. appear in any of the three provisionals, removing the two secondary references as prior art, MPEP §2136.03(III).

Substantively, in Brailean et al. the relied-upon MSE value is used to evaluate each candidate motion vector in isolation from other candidate motion vectors, then picking the "best" one to use, col. 7, line 55 *et seq*. In contrast, Claim 24, for instance, now clearly specifies that the concealing and evaluating is done on the combination of the one more macroblock and the previous particular macroblock. This is something which, even assuming for the moment without acquiescing that the relied-upon candidate motion vector-based MSE of Brailean et al. can serve as the claimed concealing and evaluating, Brailean et al. does not do or

suggest as an option for its MSE method. Accordingly, Claims 1 and 24 and their respective dependent claims are patentable.

The Office Action alleges that because the same MSE equation is used in Brailean et al. frame to frame, this means that partial mismatch values from previous iterations are "thereby" used. This is a false syllogism that is predicated on an unstated erroneous minor premise (namely, that using the same equation to evaluate candidate vectors means that the actual values from prior iterations must be used in the equation.) The defect in the minor premise explains the error of the conclusion. Simply put, despite the examiner, perhaps in frustration at being unable to arrive at a legally supportable *prima facie* case, first attempts to wave off, as lacking written description, the claimed element that "the concealing and evaluating is done on the combination of the one more macroblock and the previous particular macroblock", and then conjures up the illogical argument that because Brailean et al. reuses an equation it must also reuse old macroblocks in that equation. There is indeed a lack of written description going on here, but it is a defect in the applied reference, not the present specification. The examiner has gotten it backwards.

Indeed, the rejection is internally inconsistent because on page 6 it is expressly admitted that Brailean et al. fails to disclose adding one more macroblock to the combination during the processing iterations. For this internal inconsistency alone the rejections merit reversal.

Substantively, the examiner attempts to remedy the admitted shortfall in Brailean et al. by relying on paragraph 43 in Katsavounidis et al., but this reliance is misplaced. Paragraph 43 in essence teaches only that frames can be interlaced or not, rendering a *non-sequitur* the examiner's ensuing allegation that somehow the proposed combination would arrive at the missing claim element, which of course has nothing to do with

the distinction between interlaced frames and progressive frames. Because the proposed combination would not arrive at Claims 1 and 24, the rejection should be reversed.

Still further, the rejection appears to rely not just on the above references but also on the "general knowledge" in the art. Unfortunately for the *prima facie* case, "rarely will the skill in the art component operate to supply missing knowledge or prior art to reach an obviousness judgement....[it] does not act as a bridge over gaps in substantive presentation of an obviousness case, but instead supplies the primary guarantee of objectivity in the process", Al-Site Corp. v. VSI Int'l, Inc., 174 F.3d 1308, 50 USPQ.2d 1161 (Fed. Cir. 1999); see also In re Dembiczak, 175 F.3D 994, 50 U.S.P.Q.2d 1614 (Fed. Cir. 1999) (the range of sources available does not diminish the requirement for actual evidence, and "broad conclusory statements regarding the teaching of multiple references, standing alone, are not evidence"). Here, no evidence supporting the alleged "knowledge in the art", or even what, precisely, "knowledge in the art" is being relied on, has been identified.

(c) Turning to independent Claims 9, 19, and 21, the different weights used by Moni et al. are based on different distances from the boundaries between erroneous pixels and non-erroneous pixels, col. 8, lines 20-30. The weights are thus the same across all video packets: a pixel that is a given distance from the error boundary in one video stream is weighted identically to a pixel that is the same distance from an error boundary in another video stream.

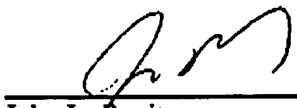
It appears to be the examiner's point that because Moni et al. teaches that the above-summarized differential weighting scheme need not be used in some cases, then somehow this translates into the missing claim element of "pixel value mismatches between macroblocks belonging to different video packets being

weighed differently from each other, with differences in weighing depending on differences in desired quality of video frames." Plainly, the examiner has constructed another logical puzzle, because how, precisely, a teaching that a weighting scheme, different from the one being claimed, need not be used at all rises to the level of a teaching of the claimed and previously untaught weighting scheme is a conundrum.

Additionally, the requisite motivation to combine is missing. Instead, the examiner blandly states that "it is considered obvious" to replace the MSE in Brailean et al. with the irrelevant weighting scheme of Moni et al. because "since Moni et al. teaches the general selective and different assignment of weights, any desired weight selection" can be used. But obviously, this is no more than a dispensation of the law of obviousness, essentially conflating the fact that two different weighting schemes are used in the references with a prior art suggestion to replace one with the other. For this additional reason the rejection merits reversal.

(d), (e) The rejections under these subsections of dependent claims inherit the deficiencies noted above and hence are reversible.

Respectfully submitted,



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APPENDIX A - APPEALED CLAIMS

1. A method for concealing errors in texture partition of a video packet, comprising:
determining a particular macroblock within the texture partition where error is detected;
concealing the error starting at the particular macroblock;
evaluating image smoothness of concealed macroblocks;
repeating said concealing and evaluating with one more macroblock added prior to the previous particular macroblock such that the concealing and evaluating is done on the combination of the one more macroblock and the previous particular macroblock, said repeating done by successively adding one more macroblock to the combination until all macroblocks in the texture partition have been concealed; and
selecting a set of macroblocks, including a combination of decoded and concealed macroblocks, that produces best image smoothness.

2. The method of claim 1, further comprising:
storing all decoded macroblocks of texture data in the texture partition up to the particular macroblock.

3. The method of claim 1, wherein said concealing the error starting at the particular macroblock includes performing motion compensated temporal replacements of macroblocks starting at the particular macroblock.

4. The method of claim 3, wherein said performing motion compensated temporal replacements is done for those macroblocks whose motion vectors have changed.

5. The method of claim 1, wherein said evaluating image smoothness of concealed macroblocks includes computing smoothness of macroblock boundaries.

6. The method of claim 5, wherein said smoothness of macroblock boundaries is measured by summing pixel value mismatches between macroblock boundary pixels.

7. The method of claim 6, wherein said summing pixel value mismatches includes storing partial mismatch values.

8. The method of claim 6, wherein said summing pixel value mismatches includes summing squares of the pixel value differences.

9. A method for concealing errors in texture partition of a video packet, comprising:
determining a particular macroblock within the texture partition where error is detected;
concealing the error starting at the particular macroblock;
evaluating image smoothness of concealed macroblocks;

repeating said concealing and evaluating with one more macroblock added prior to the previous particular macroblock, said repeating done until all macroblocks in the texture partition have been concealed; and

selecting a set of macroblocks, including a combination of decoded and concealed macroblocks, that produces best image smoothness, wherein pixel value mismatches between macroblocks belonging to different video packets are weighed differently from each other, differences in weighing depending on differences in desired quality of video frames.

10. The method of claim 9, wherein the pixel value mismatches between macroblocks that belong to different video packets are configured to weigh more than the pixel value mismatches between macroblocks that belong to same video packets.

11. The method of claim 6, wherein said pixel value mismatches are computed by reusing the partial mismatch values from previous iteration.

12. The method of claim 1, further comprising:
detecting the error in the video packet.

13. The method of claim 12, wherein said detecting includes detecting invalid variable length code.

14. The method of claim 12, wherein said detecting includes detecting inconsistent resynchronization header information.

15. The method of claim 12, wherein said detecting includes detecting receipt of out-of-range motion vectors.

16. The method of claim 2, wherein said detecting includes DCT coefficient counts greater than a predetermined amount of approximately 64 pixels for a macroblock and Y/Cr/Cb pixel values out of range.

17. The method of claim 2, wherein said selecting a set of macroblocks includes recovering some of the stored decoded macroblocks.

18. The method of claim 17, wherein said some of the stored decoded macroblocks include decoded macroblocks up to a macroblock that produced the best image smoothness.

19. A method for concealing errors in texture partition of a video packet, comprising:
determining a particular location within the texture partition where error is detected;
concealing the error in texture data starting at the particular location;
evaluating image smoothness of the concealed texture data at least in part by assigning first weights to pixel value mismatches between macroblocks in a first video data structure and assigning second weights to pixel value mismatches between macroblocks in a second video data structure, the first and second weights

not being identical to each other and each being established based at least in part on a respective desired quality of video decoded from the respective video data structure;

repeating said concealing and evaluating with one more texture data unit added prior to the previous particular location, said repeating done until all texture data units in the texture partition have been concealed; and

selecting a set of texture data units, including a combination of decoded and concealed texture data units, that produces best image smoothness.

20. The method of claim 19, wherein said concealing the error in the texture data starting at the particular location includes performing motion compensated temporal replacements of texture data units starting at the particular location.

21. An error concealment system for texture partition of a video packet, comprising:

an error location detector to receive video packets, and determine a particular macroblock within the texture partition where error is detected;

an error concealment element to conceal the error starting at the particular macroblock;

an image smoothness evaluator to evaluate the concealed macroblocks, the evaluator at least in part summing squares of element value differences in a manner that weighs element value mismatches between macroblocks belonging to different video packets differently based at least in part on different desired qualities of video;

a selector to select a set of macroblocks, including a combination of decoded and concealed macroblocks, that produces best image smoothness.

22. The system of claim 21, wherein said error concealment element includes a motion compensated temporal replacement element.

23. The system of claim 21, further comprising:

a storage element to store all decoded macroblocks of texture data in the texture partition up to the particular macroblock.

24. A computer readable medium containing executable instructions which, when executed in a processing system, causes the system to conceal errors in texture partition of a video packet, comprising:

determining a particular macroblock within the texture partition where error is detected;

concealing the error starting at the particular macroblock;

evaluating image smoothness of concealed macroblocks;

repeating said concealing and evaluating with one more macroblock added prior to the previous particular macroblock, the concealing and evaluating being done on the combination of the one more macroblock and the previous particular macroblock, said repeating done by successively adding one more macroblock to the combination until all macroblocks in the texture partition have been concealed; and

selecting a set of macroblocks, including a combination of decoded and concealed macroblocks, that produces best image smoothness.

25. The computer medium of claim 24, further comprising:

storing all decoded macroblocks of texture data in the texture partition up to the particular macroblock.

27. The computer medium of Claim 24, wherein the evaluating instruction includes summing squares of pixel value differences that weighs the pixel value mismatches between macroblocks belonging to different video packets differently.

APPENDIX B - EVIDENCE

None (this sheet made necessary by 69 Fed. Reg. 155 (August 2004), page 49978.)

APPENDIX C - RELATED PROCEEDINGS

None (this sheet made necessary by 69 Fed. Reg. 155 (August 2004), page 49978.)